

Claims

1. Method of manufacture of a piston for an internal combustion engine, the said piston being formed from a metal part cast in one piece, wherein heating of a billet is carried out so as to bring it to an intermediate temperature between its solidus temperature and its liquidus temperature, and that shaping thereof by thixoforging is carried out.
2. Piston for an internal combustion engine, composed of a metal part cast in one piece, wherein it has been manufactured by heating of a billet so as to bring it to an intermediate temperature between its solidus temperature and its liquidus temperature, followed by shaping by thixoforging.
3. Piston as claimed in Claim 2, wherein its lugs are formed by stirrup pieces provided on the base of the internal cavity of the piston, provided with a hole for the passage of the pin joining the piston and the rod, and in that it has on its skirt openings which give access to the holes in the stirrup pieces.
4. Piston as claimed in Claim 2, wherein the shape of the wall of the piston top follows that of the surface of the piston top on its side intended to be turned towards the combustion chamber.
5. Piston as claimed in Claim 2, wherein it has reinforcing ribs.
6. Piston as claimed in Claim 2, wherein it is produced from carbon steel.
7. Piston as claimed in Claim 6, wherein its composition, in percentages by weight, is:
 - $0.35\% \leq C \leq 1.2\%$
 - $0.10\% \leq Mn \leq 2.0\%$
 - $0.10\% \leq Si \leq 1.0\%$
 - $traces \leq Cr \leq 4.5\%$
 - $traces \leq Mo \leq 2.0\%$

- $\text{traces} \leq \text{Ni} \leq 4.5\%$
- $\text{traces} \leq \text{V} \leq 0.5\%$
- $\text{traces} \leq \text{Cu} \leq 3.5\%$
- $\text{traces} \leq \text{Al} \leq 0.060\%$
- $\text{traces} \leq \text{Ca} \leq 0.050\%$
- $\text{traces} \leq \text{B} \leq 100 \text{ ppm}$
- $\text{traces} \leq \text{Ti} \leq 0.050\%$
- $\text{traces} \leq \text{Nb} \leq 0.050\%$

the other elements being iron and conventional impurities resulting from the manufacture.

8. Piston as claimed in Claim 7, wherein it includes up to 0.180% of S and one at least of the elements chosen from amongst up to 0.080% of Bi, up to 0.020% of Te, up to 0.040% of Se, up to 0.070% of Pb.
9. Piston as claimed in Claim 2, wherein it is produced from hot-tooling steel.
10. Piston as claimed in Claim 2, wherein it is produced from high-speed steel.
11. Piston as claimed in Claim 2, wherein it is produced from stainless steel.
12. Piston as claimed in Claim 2, wherein it is produced from cast iron.
13. Piston as claimed in Claim 2, wherein it is produced from an alloy based on Fe-Ni.
14. Piston as claimed in Claim 2, wherein it is produced from an alloy based on Ni-Co.